

**Translation**

**PATENT COOPERATION TREATY**

PCT/EP2003/013557



**PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 020987WO BU	<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416	
International application No. PCT/EP2003/013557	International filing date (day/month/year) 02 December 2003 (02.12.2003)	Priority date (day/month/year) 03 December 2002 (03.12.2002)
International Patent Classification (IPC) or national classification and IPC C10M 137/04		
Applicant THYSSENKRUPP STAHL AG		

- This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 9 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, comprising:
  - ☐ (sent to the applicant and to the International Bureau) a total of \_\_\_\_\_ sheets, as follows:
    - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

- This report contains indications relating to the following items:

- ☒ Box No. I Basis of the report
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand 01 July 2004 (01.07.2004)	Date of completion of this report 01 April 2005 (01.04.2005)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International Application No.

PCT/EP2003/013557

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☐ The international application as originally filed/furnished

- ☒ the description:

pages \_\_\_\_\_ 1-17 \_\_\_\_\_, as originally filed/furnished  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- ☒ the claims:

pages \_\_\_\_\_ 1-35 \_\_\_\_\_, as originally filed/furnished  
pages\* \_\_\_\_\_, as amended (together with any statement) under Article 19  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- ☒ the drawings:

pages \_\_\_\_\_ 1/1 \_\_\_\_\_, as originally filed/furnished  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International Application No.

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## Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application.

☒ claims Nos. 30

because:

☐ the said international application, or the said claims Nos. \_\_\_\_\_  
relate to the following subject matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. \_\_\_\_\_  
are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. \_\_\_\_\_ are so inadequately supported  
by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claims Nos. 30

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the  
Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with  
the technical requirements provided for in Annex C-bis of the Administrative Instructions.

☐ see Supplemental Box for further details.

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Box No. IV Lack of unity of invention

1. ☐ In response to the invitation to restrict or pay additional fees the applicant has:
- ☐ restricted the claims.
  - ☐ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☐ neither restricted nor paid additional fees.
2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with.
  - ☒ not complied with for the following reasons:  
See supplemental sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
  - ☒ the parts relating to claims Nos. 1-30,32-25

## Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: BOX IV.3.

This Authority has determined that the present international application contains multiple inventions or groups of inventions which are not linked by a single general inventive concept (PCT Rule 13.1), namely:

## I. Claims 1-30, 35

Sheet metal or sheet metal blank with a lubricant coating and comprising a layer containing an organic phosphoric acid ester (claims 1-17).

Method for producing sheet metal or a sheet metal blank (according to claims 1-17) by applying to the coated sheet metal a solution containing an organic phosphoric acid ester and by applying a lubricant (claims 18-30).

Use of sheet metal or a sheet metal blank (according to claims 1-17) to produce metal bodies by moulding (claim 35).

## II. Claim 31

Use of a solution containing an organic phosphoric acid ester to treat metal surfaces.

## III. Claims 32-34

Aqueous solution containing an organic phosphoric acid ester and a water-soluble organic sulphur

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**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Box IV.3.

compound and/or an organic molybdenum compound  
(claims 32-33).

Concentrate for producing the aqueous solution  
(claim 34).

The reason is as follows:

The general concept linking independent claims 1,  
18, 31, 32, 34 and 35 is simply that of an organic  
phosphoric acid ester, which cannot be novel.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	3-10, 12, 14-16, 23-27, 30	YES
	Claims	1, 2, 11, 13, 17-22, 28, 29, 32-35	NO
Inventive step (IS)	Claims	none	YES
	Claims	3-10, 12, 14-16, 23-27, 30	NO
Industrial applicability (IA)	Claims	1-30, 32-35	YES
	Claims		NO

## 2. Citations and explanations

1. The present application does not meet the requirements of PCT Article 33(1) because the subject matter of claims 1, 2, 11, 13, 17 to 22, 28, 29 and 32 to 35 lacks novelty (PCT Article 33(2)). In addition, the subject matter of the remaining claims, the novelty of which is not prejudiced, does not involve an inventive step (PCT Article 33(3)).

2. Reference is made to the following documents:

D1: WPI abstract; AN 1985-293423 & JP 60 202196  
D2: US-B1-6 478 885  
D3: US-A-3 220 233  
D4: GB-A-1 004 836  
D5: US-A-5 706 684  
D6: EP-A-0 146 140  
D7: US-A-4 017 335  
D8: US-A-4 313 836  
D9: GB-A-2 142 650  
D10: US 2002/006880

Unless indicated otherwise, see the sections listed in the international search report.

D1 discloses as lubricant a phosphoric acid ester (e.g. monomethyl, monobutyl, dibutyl-, octyl-phosphate) which is coated onto sheet metal using heat. The metal is then subjected to cold working using an oil which also contains the ester. The subject matter of claims 1, 2, 13, 18, 19, 22 and 35 lacks novelty over D1.

D2 discloses ethoxylated phosphate esters or waxes as additives in conventional phosphating compositions. The application thereof to galvanised sheet metal, followed by drying and finally moulding using separate press oil leads to a reduction in the coefficient of friction. D2 prejudices the novelty of the subject matter of claims 1, 2, 11, 17 to 22, 28, 29 and 35.

D3 concerns lubricants for drawing metals, said lubricants consisting of mixtures of N-alkyl amine salts of fatty acids and phosphate esters (see example IV, mixture of mono- and diiso-amylphosphate). D3 does not disclose a preformed lubricant layer. It is at least obvious for this reason to use lower phosphoric acid esters and mixtures of mono- and diesters.

The teaching of D4 shows that cellulose ether can be used in the form of prefabricated layers in metal working. Trichloroethyl phosphate, *inter alia*, is used as an additive. The use of mineral oil (as separate lubricant) is recommended when deep drawing previously coated parts; other phosphate esters (from alcohols with 8 to 20 carbon atoms) are also described as being useful in difficult metal working operations. The subject matter of claims 1, 2, 17



to 19 and 35 is rendered obvious by D4.

D5 concerns aqueous lubricant compositions used in metal working and preferably containing an ethoxylated phosphate ester in addition to other lubricant components such as tall oil acid, sulphurised fats and olefins, EO/PO copolymers, disodium-2,5-dimercapto-1,3,4-thiadiazols and thiocarbamates; the subject matter of claim 32 thus lacks novelty. The compositions are applied before the metal working, but there is nothing to indicate the use of a separate press oil or lubricant. The document discloses common components as per claims 4 to 6 and 24 and in the common quantities as per claims 14 and 26.

D6 discloses anhydrous, fluid lubricant compositions for use in metal working, containing oil, a monoalkyl phosphate (e.g. methyl, butyl, octyl etc.) and optionally a fatty acid. The usefulness at least of monoalkyl esters in metal working procedures can be derived from this document.

Documents D7 to D10 disclose aqueous compositions containing phosphate ester and organic sulphur and/or molybdenum compounds. Document D7 also discloses an organic molybdate which with the aid of amine is converted to form an organic compound. The subject matter of claims 32 to 34 thus lacks novelty over D7.

D8 discloses compositions comprising phosphate ester, sulphur compounds and an organic molybdenum compound and prejudices the novelty of claims 32 and 34.

D9 and D10 disclose compositions comprising phosphate ester and sulphur compounds; the subject matter of claims 32 and 34 thus lacks novelty.

### 3. Inventive step

The subject matter of claim 3, that is a mixture of mono- and dibutyl-phosphate, is not inventive in relation to D1, since both these components are mentioned in D1 (full text and examples). The application does not contain any comparative examples which demonstrate an effect in relation to D1.

It is clear from D3 that mixtures of mono- and diiso-amylphosphate are worth considering as drawing components and D6 also discloses the usability of monobutyl phosphate. It was obvious to choose a mixture comprising relatively short phosphate esters in order to reduce friction in the metal working method compared with the friction occurring when not using phosphate ester.

Claims 4 to 6 and 24 relate to common additional components which are included, for example in D5, in lubricants used in a similar manner and are therefore obvious and non-inventive.

An inventive step cannot be acknowledged in respect of the subject matter of claims 4 (organic molybdenum compound) and 7. Although no particular document is cited in this regard, the compounds in these claims are common and are familiar to a person skilled in the art. The application does not contain any examples which demonstrate that said

compounds together with the others have a specific effect.

The inorganic compounds as per claims 8, 9 and 26 are also known to a person skilled in the art and without any particular unexpected effect having been demonstrated cannot establish an inventive step.

Although claim 10 defines a layer thickness which cannot be found in any of the documents cited, that layer thickness does not result in any special properties which would not follow from the prior art, for example D1.

Claim 11 appears to be superfluous, but if the significance of the claim is intended to lie in the sequence of the layers, then it is doubtful whether claim 1 is at all clear (PCT Article 6).

Claims 12 and 30 relate to conventional quantities of lubricant and claims 14 to 16, 25 and 27 relate to conventional quantities of common components and are therefore obvious and non-inventive.